ENERGY STAR® PortfolioManager™

Web Services

Introduction to Exchanging Data

September 2012

Overview

Portfolio Manager is America's national platform for benchmarking energy efficiency, with over 250,000 buildings benchmarked and new accounts added every day. You can enter your energy and operational data into Portfolio Manager via the website (manually), via Excel spreadsheet, or via web services. The web services are specifically designed to facilitate large scale benchmarking. These web services will allow your own software system to interface directly with Portfolio Manager to enter utility bill and operational building data and to retrieve key performance metrics, such as the ENERGY STAR score. Web services offer the flexibility for utilities, energy services and software providers, and large property-portfolio holders to link their information systems with Portfolio Manager in the way that best services their customer's needs for The U.S. Environmental Protection Agency (EPA) ENERGY STAR tools and metrics.

In the following sections, we will provide a more detailed description of the ENERGY STAR Portfolio Manager ecosystem, including introductions to each of the following areas:

- ENERGY STAR Commercial Buildings Program
- Portfolio Manager
- ENERGY STAR Score
- Exchanging Data with Portfolio Manager
- EPA' s Portfolio Manager Upgrade

System Update Note: EPA is in the process of a significant upgrade to Portfolio Manager, which includes changes to both the user interface and to the web services used to exchange data. This new upgrade will be completed in June of 2013. If you have previously offered Automated Benchmarking Services (ABS) with Portfolio Manager, we recommend that you refer to *Transitioning from Automated Benchmarking Services (ABS 2.5)*[1]

ENERGY STAR Commercial Buildings Program

Energy efficiency is the fastest, cheapest, and largest untapped solution for saving energy, saving money, and preventing greenhouse gas emissions. In 1992, the U.S. Department of Energy (DOE) and EPA created ENERGY STAR, an international standard for energy efficiency. Today, commercial buildings can utilize the ENERGY STAR platform for guidance on energy efficient design, function, and performance. Through ENERGY STAR, EPA has helped thousands of businesses and organizations tap into these savings in the places where we work, play, and learn.

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[1] http://portfoliomanager.energystar.gov/webservices/pdf/Transitioning_from_Automated_Benchmarking_(ABS)_2.5.pdf

For existing commercial buildings, EPA recommends a strategic approach to energy management. We offer proven strategies that help organizations assess, understand, manage, and improve their overall energy performance. You can learn more detail about this strategic approach at www.energystar.gov/guidelines.

One of the most critical steps in strategic energy management is benchmarking. Benchmarking is a method of comparison used by institutions and individuals to better understand performance compared to an accepted standard. Benchmarking utilizes raw data, performance metrics, and industry trends to make comparisons to industry norms or best practices in order to provide a point of reference for an institution. Through benchmarking, many services and systems can be altered to perform with optimal efficiency. Benchmarking a building's energy performance is a key first step to understanding and reducing energy consumption, lowering operational costs, and improving your carbon footprint. The EPA ENERGY STAR program provides Portfolio Manager as a free benchmarking tool, to help all organizations begin measuring, assessing, and improving their performance.

Portfolio Manager
Launched in 1999, Portfolio Manager is EPA's premier web-based solution for managing and tracking the energy consumption and environmental footprint of buildings. It utilizes energy consumption data as a basis for benchmarking and tracks energy inputs of all types. The web-based tool informs building owners and managers about their facilities' performance, which helps them make informed management and investment decisions.

Portfolio Manager provides a big-picture view of how energy is being used by facilities and campuses and allows for comparison to similar facilities. Organizations that intend to use web services are encouraged to create a Portfolio Manager account and input sample facilities to see an example of how Portfolio Manager captures data and presents the ENERGY STAR energy performance score to users.

Portfolio Manager is also the application through which organizations apply to earn the ENERGY STAR certification for a building or to earn recognition as an ENERGY STAR Leader. Applications for recognition remain solely a function of Portfolio Manager. At this time, there are no web services for creating or submitting applications for recognition. Therefore, you or your customer must log into Portfolio Manager to submit and track applications for recognition.

ENERGY STAR Score
The ENERGY STAR score is a type of external benchmark that helps energy managers evaluate how efficiently their buildings use energy relative to similar buildings nationwide. The scoring system's 1-to-100 scale allows everyone to quickly understand how a building is performing — a score of 50 indicates average energy performance, while a score of 75 or better indicates top performance.

EPA, in conjunction with stakeholders, developed the ENERGY STAR score as a screening tool; it does not by itself explain why a building performs a certain way, or how to change the building's performance. It does, however, help organizations assess performance and identify

those buildings that offer the best opportunities for improvement and recognition. The score is applicable for the following types of properties:

- Bank Branch
- Barracks
- Courthouse
- Data Center
- Distribution Center
- Financial Office
- Hospital (General Medical & Surgical)

- Hotel
- K-12 School
- Medical Office
- Non-Refrigerated Warehouse
- Office
- Refrigerated Warehouse
- Residence Hall/Dormitory

- Retail Store
- Senior Care Community
- Supermarket/Grocery Store
- Wastewater Treatment Plant
- Wholesale Club/Supercenter
- Worship Facility

To develop the ENERGY STAR performance scale, EPA conducts statistical analysis on national building energy use survey data. Typically, we will use the Commercial Building Energy Consumption Survey (CBECS), a survey conducted by the DOE's Energy Information Administration. The analysis of this data helps us identify the key drivers of energy use in each property type, so that we can normalize appropriately in the ENERGY STAR score. To receive the score in Portfolio Manager you are required to enter 12 months of energy data along with the operational parameters identified as significant in our analysis (typically 6-8 operational details)[2].

Buildings with an ENERGY STAR score of 75 or higher can apply for ENERGY STAR certification. By earning and displaying the ENERGY STAR, organizations convey superior energy performance and a commitment to using resources responsibly to tenants, customers, and employees. ENERGY STAR certification also sends a positive message to lenders, appraisers, owners, investors, and potential tenants or customers. Nearly 20,000 commercial buildings and plants in America have taken action to save money and achieve energy efficiency by becoming ENERGY STAR certified[3].

Exchanging Data with Portfolio Manager
EPA provides a suite of web services to help you exchange data with Portfolio Manager. These services enable direct transfer between your energy management system database and Portfolio Manager. You can use these services to manage building characteristics, operational information, and energy data on behalf of your customers and retrieve key performance metrics, such as the ENERGY STAR score.

The web services are designed for consistency with data entry on the front-end user interface. Whether you access the Portfolio Manager database directly through our website or on the back-end via a web service, you are accessing the same database and you will provide and

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[2] Specific technical details about the ENERGY STAR score are available at:
http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager_model_tech_desc
[3] More information on certification is available at: http://www.energystar.gov/index.cfm?c=business.bus_bldgs

receive the same information. For example, the Get Metrics web service will allow you to retrieve all metrics and data elements that can be accessed via the front-end user interface.

You can use web services to create new Portfolio Manager accounts, properties, and meters. In addition, if you have customers who already have Portfolio Manager accounts, they can form a connection with you and share their properties and meters. This sharing process provides you with authorization to access and update their data.

If you are interested in exchanging data with Portfolio Manager, you have the flexibility in terms of your work with existing and new properties. Some service companies will exchange all data associated with a property to provide full management; other software companies may focus mainly on extracting calculated metrics for use in their software tools; and still other companies, like utilities, may elect to populate meter data for buildings that are already in the tool and directly managed by the building owner. You should review all of the services to determine what applications are most appropriate for your business.

EPA has adopted a set of web services that leverage standard Representational State Transfer (REST) protocol. Each service will use some or all of the following basic methods:

- GET – Retrieves existing data
- POST – Add a new item
- PUT – Edits or updates the value of an existing entry or attribute
- DELETE – Removes an existing entry

The REST-based architecture relies on small units of work. Each REST call is designed to touch only one piece of data. This means that a typical system integration will cycle through multiple calls when updating data. For example, when using the meter consumption services, you will only send one call per meter. Because each call is small in size, each individual call will be synchronous; so your system will receive an immediate response indicating if the call was successful.

While web services for Portfolio Manager were first introduced in 2005, the adoption of a REST-based platform has begun as part the Portfolio Manager upgrade, scheduled for release in June of 2013. The REST services represent an evolution of EPA's software architecture, designed to align with common trends in the market and simplify the process of integrating with our system.

EPA develops and maintains all of the software and documentation needed to successfully exchange data with Portfolio Manager via web service. If you wish to exchange data with Portfolio Manager, it is your responsibility to develop your own software system and integration code. EPA does not develop integration code for you, and cannot offer individual review to debug your software, nor can we recommend proprietary programming products or services to accomplish these tasks. Online help is available at buildings@energystar.gov to assist you in questions you have about ENERGY STAR Buildings, ENERGY STAR benchmarking and certification, using Portfolio Manager, and the web service schema and documentation.

EPA's Portfolio Manager Upgrade

EPA is currently in the process of upgrading Portfolio Manager. This project, scheduled for completion in June of 2013, will include substantial changes to all aspects of Portfolio Manager, including both the user-interface and the web services. The progress of that project can be followed at www.energystar.gov/pmupgrade.

As of September 24, 2012, we have made available a complete testing environment for the REST web services that will be used to exchange data with Portfolio Manager. If you are new to exchanging data with Portfolio Manager, you should begin by using these test services. Please refer to *Testing Web Services*[4] for general information about how to test the system. For the complete schema definitions, refer to our full Application Programming Interface documentation[5].

If you have previously offered Automated Benchmarking Services to exchange data with Portfolio Manager prior to September of 2012, we also recommend you begin testing the new REST web services. Please note that although all of your account information will transfer to the new Portfolio Manager database, we will not maintain backward compatibility with existing ABS web services after the new system goes live in June of 2013.

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[4] http://portfoliomanager.energystar.gov/webservices/pdf/Testing_Web_Services.pdf

[5] http://portfoliomanager.energystar.gov/webservices/home/api.

ENERGY STAR® is a U.S. Environmental Protection Agency program helping businesses and individuals fight climate change through superior energy efficiency.

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